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Original Research Article

The impact of waste's management on the employability of women in Tunisia

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Abstract

The aim of this work is to study the link between women's employment rate in the labor market and waste management in Tunisia on the one hand and on the other hand to analyze the nature of the empirical relationship between these two indicators.

We adopt the perspective of Malik et al (2018) while relying on an updated survey to identify the fundamental problems at the household level to find strategic steps and practices in the implementation of waste management during a ten-year period (2010 - 2019). The results shows that there is a positive correlation between women's activity rate and waste management.

Keywords: Female employment rate, Waste management, Survey and Tunisia

INTRODUCTION

Waste is the non-rational loss or discarding of a resource after haphazard use, incomplete or unnecessary consumption. It occurs throughout the supply chain, from production through storage, processing, distribution, management and consumption.

Waste management, one of the branches of applied rudology, involves the collection, trading, transportation, waste treatment, reuse or disposal of waste, usually from human activities.

This management aims to reduce their effects on human and environmental health. In this communication, we are interested in the disposal of these wastes.

Specifically, we will discuss this waste management in relation with the employability of women in the labor market (Argawal et al. 2015).

Indeed, the rapid urbanization of developing countries and more precisely in Tunisia, has caused, in recent years, the deterioration of the environment. This deterioration is linked to the huge amount of waste (food, construction waste, plastic bags, paper, old clothes and old furniture).

One of the most worrying consequences of this deterioration is the problem of long neglected waste management which has become a major source of concern for public authorities, citizens and industrialists who produce or treat them. This is what implies the existence of such an influence.

However, waste management (collection, recovery and recycling) is not carried out on a virgin ground but in a multitude of private actors, represented mainly by individuals or micro-enterprises and frequently belonging to the informal sector (Wilson et al. 2015; Scheinberg et al. 1999). Women are individuals working, for the most part, in this informal sector.

Thus, women are also likely to be marginalized when informal activities become formalized.

Researchers, environmentalists, and communities in general are interested in waste management. The latter is not a new or unprecedented concept.

Therefore, it has been pointed out that the modernization of public services and waste management are enhancing economic activities. That is why all countries are adopting better waste management strategy. Taking the case of Tunisia; Since about twenty years, it pursues a process of modernization including better planning of collection, significant investments in the closure of illegal landfills and the realization of regional landfills (Sweep-Net, 2010).

Presented administrative reports, revealed that the annual quantities of plastic waste collected and recycled, under the ECOLFE[3] system, managed by the National Agency for Waste Management (ANGed), have dropped significantly, after the revelation from about 5600 tons in 2017, compared to 16000 tons in 2010.

There has been a resurgence of epidemics caused by poor waste management. More than 90% of waste in low-income countries is often disposed of in unregulated landfills or burned in the open. As a result, these practices are detrimental to health, safety and the environment[4]. However, each year, poor solid waste management causes an estimated 22 million illnesses and 216,000 deaths worldwide (WB, 2019).

Indeed, it is found that the daily routine of women's activities in many traditional African communities includes cooking, domestic sanitation, processing of harvested agricultural products, and small-scale industrial production at home. This leads to inadequate management.

Women's participation in the labor market is minimal compared to men. In doing so, women's employability results in the development of skills and adaptability of the workforce in which all those who are capable of working are encouraged to develop their skills, knowledge, technology and adaptability necessary to enter and remain in the labor market for the duration of their working lives (Treasury, 1997). It makes, in addition, the ability and willingness of workers to remain attractive in the labor market (supply factors), by responding to and anticipating changes in tasks and the work environment (demand).

Much work has been done on the situation of women in the management of the urban environment. Traditionally, men have reflected participation in commercial activities and women in domestic spheres. These traditional roles have disadvantaged women in their ability to participate in environmental decision-making.

Environmental preservation and management can improve the living environment and preserve the well-being of everyone within it: each citizen can throw away less and throw away better (Bontoux and Leone 1997).

Researchers have focused on waste (Meadows et al.,1972; Dyson and Chang 2004; Lebersorger and Beigl 2011, Pongrácz, E. (2002)) and waste management more broadly (Phillips et al., 2002; Hubka and Eder (1988). The conceptual description of waste is not the primary focus of these definitions: the waste label simply indicates that something will be treated as waste. Problems arise, therefore, when authorities are adamant about labeling a substance as waste, even when there is a potential for reuse or recovery.

Indeed, waste management varies by gender in some countries or regions. Feminists have claimed that women and men are not only affected by environmental sustainability. They also have an important role to play in it (UNEP, 2016), but women bear a greater share of childcare responsibilities.

We note that in most African capitals, only less than 30% of waste is evacuated. The 70% that is not evacuated constitutes illegal deposits that litter the gutters and the streets. This insufficient collection rate has consequences on the health of the population and on the urban economy. Moreover, the rate of waste collection is rarely efficient, except in certain privileged areas (shopping centers, tourist areas, high-end residential areas). It generally varies from 50% to 70%, but it is much lower in working-class neighborhoods (Bontianti et al., 2008).

Demographically, in Tunisia, the total working population is 4074574 in 2018 against 4099916 in the following year. This increase is explained by an increased birth rate. The urban population and the number of dwellings have experienced a notable increase that is 61% and 76% respectively. It is important to note that the activity rate, with regard to gender, varies, in recent years between 35 and 40% for women against 67% for men in 2018, a gap of 25%[5]. These stylized facts show that women remain underrepresented in public services, despite strong disparities between countries for historical and socio-economic reasons (OECD, 2014)

To reduce and eliminate waste, the participation of women is essential. The sustainable access of populations to sanitation and household waste management is a priority for African countries in general and Tunisia in particular to achieve the Millennium Development Goals (MDGs). Because sanitation and household waste management are essential elements for the improvement of the living conditions of the populations. However, several factors can explain the low presence of women in local functions, including difficulties related to the reconciliation of family life and professional life.

There are few waste management businesses that are owned or operated by women. Most women are employed by the processing companies to sort, clean, separate and sift recyclables through the various stages of processing. Indeed, women are preferred for time- and skill-intensive tasks. It is therefore crucial to understand the individual and societal dynamics that underlie the role of women's empowerment in society. Yet even before we do, we need to clarify what we mean by women's empowerment (Haile, Bock & Folmer 2012; Wyndow, Li & Mattes 2013; Goldman & Little 2015).

Women's empowerment should not be understood as simply a matter of power, but more importantly about effectively using that power for change (Kabeer 1999; Janssens 2009; Goldman & Little 2015). There are a variety of options for household waste to enter landfill or recovery cycles handled by different actors. Some waste, especially plastics, cardboard, and paper, is pre-sorted both by households and by businesses and stores for collection by informal collectors; other waste is thrown away in the trash.

The issue of waste is a daily one and affects every individual, whether at work or at home. As a consumer, a thrower, a user of household waste collection, a recycler, a citizen or a taxpayer, everyone can and must be an actor of a better waste management. Simple gestures allow us to act concretely to improve our living environment and preserve the well-being of everyone.

Several questions therefore need to be asked. How does the employment of women households improve waste management? Does including women in solid waste management help to find ways to improve the environment? What is the best way to include women in solid waste management?

In order to achieve the results expected in this work, we set several objectives that are broken down into general and specific objectives

This work focuses on analyzing the link between women's employability and waste management. Specifically, it is to analyze:

- The effect of female household employability on household municipal waste
- The effect of schooling rates on household municipal waste

The approach chosen is as follows: Section 2 presents the literature review. Section 3 presents the methodology and results. Section 4 concludes and proposes some recommendations.

Literature Review

Several authors have contributed to the debate on the link between female employment rates and waste management, both theoretically and empirically. The two points should inform each other.

Theoretical literature review

The relationship between female labor force participation and waste management has been the subject of much debate in the economic literature. From the beginning, economists have been interested in the theoretical link between these two variables. However, it is important to emphasize that women are the primary educators in the environment (Tiwari, 2001). Indeed, they have an influence on the awareness of these children, regarding to education and food.

Food represents the largest category of waste (WRAP; 2011), in the context of hospitality. Two terms have been used, from this perspective, often interchangeably, in the literature: food loss and food waste. Food loss is the decrease in the quantity or quality of food for human consumption that is ultimately not eaten by people or has suffered a decrease in quality that is reflected in its nutritional value, economic value, or food security (FAO, 2015).

The division of responsibilities for waste management roles is also influenced by gender. In many areas, women are expected to participate in cleaning and waste disposal activities in the household and sometimes in the community, without remuneration. For those who can afford it, they transfer these responsibilities to helpers.

In contrast, men are more likely to deal with waste only when directly related to their daily activities, or when it is a paid effort (Woroniuk, B.; Schalkwyk, J. 1998).

The varied nature and complex composition of waste poses a major challenge (Williams, 1995). Although considered invaluable by one user, waste may become valuable to another (Bontoux and Leone, 1997). Also, there is no such thing as an ultimate waste, as the definition of waste always depends on the perceived level of utility (Pongrácz and Pohjola, 1999). Certainly, waste has a number of fractions (paper, glass, and metal) and physical states (liquid and solid).

Although both women and men contribute to the social activities of production and consumption, women often have multiple roles, resulting in problems of inequality, especially for poor women. These roles mainly include meeting basic needs and welfare at the household level through cleaning, cooking, child rearing, livestock handling and farming (Tiwari, 2001).

Knowledge of waste issues is different by gender and age. Also, women, men, and children are almost certain to have different behaviors with respect to knowledge of waste disposal sites in their neighborhood. But women's contribution to environmental frameworks has been systematically marginalized, resulting in strategies that are fundamentally blind to gender differences (Piñeiro et al, 2014). Hence, the environment requires an understanding of its importance from people who are knowledgeable about the issue and capable of making decisions on behalf of a company (Heath and Norman, 2004).

Dobbs (1991) considers the private and social costs of waste collection and examines the user fees for collection and the reimbursement or user subsidy associated with proper waste disposal. Gender blindness refers primarily to the inability to recognize that women's/girls' and men's/boys' roles and responsibilities are assigned or imposed on them in specific social, cultural, economic, and political contexts (UNSD, 2018).

In addition, women have access to a small variety of jobs. They are paid less than men for jobs in the same sector, and have higher unemployment rates than men across all educational backgrounds (Sen 1992). Men overwhelmingly dominate decision-making positions such as corporate boards and central banks, while women are generally excluded from these positions.

However, Raudsepp (2001) points out that women were much more likely than men to be concerned about environmental issues. It has been consistently shown that women have more environmentally conscious attitudes than men. The common reason given for the gender differences is that girls are asked to do most of the sweeping and cleaning. Similarly, they are called upon to do more than their male counterparts, the maintenance work at home and even outside.

Moreover, it has been shown by researchers and feminists that gender equality, in addition to being a human right, has significant multiplier effects on women, their families, and their communities. From this perspective, women's empowerment must be understood as not just about the possession of power, but more importantly about the effective use of that power for change (Goldman and Little 2015). In short, the lack of women's empowerment leads to unjust political, economic, and social conditions for women, as well as the underutilization of the full potential of society as a whole.

When gender inequalities are reduced, communities are healthier. Clearly, solid waste management activities involve risks, either to the worker directly involved or to the nearby resident. These risks occur at every stage of the process, from the time residents handle waste at home for collection or recycling to the point of final disposal.

Thus, women's involvement in water and sanitation issues is always hindered by power imbalances in communities; intra-household and intra-family relationships; different constraints to participation; different capacities to participate; and perceived benefits of participation (AWRD, 2004).

Gender is a variable that has received consistent attention among researchers (Practical Action 2004, Practical Action 2005, and Practical Action 2006). Indeed, the rights-based approach and ecofeminism for women's development have been promoted to achieve a positive transformation of power relations between men and women. Under these conditions, Roy and Grow, (2004) point out that since women are responsible for cleaning, food preparation, family health, laundry and housekeeping, women and men may have different views on household waste management.

However, Khanal and Souksavath (2004) argue that solid waste collection extends beyond the needs of households as a women find jobs that meet the demand of small and large industries for waste paper, plastic, metals, rags, rubber, leather, glass and ceramics, bone as raw material substitutes. Thus, each major city is building a network of waste pickers, dealers and transporters, and itinerant solid waste collectors, sorters and processors, buyers, dealers and manufacturers.

Neoclassical economic theory suggests that women's decision to enter the labor market is the result of changes in the cost-benefit relationship of wages relative to activities such as housework, home production, and leisure time (Pettit and Hook, 2005).

Cost-benefit analysis is influenced by both the demand and the supply sides of the labor market. On the supply side, individuals are seen as rational actors who act to maximize benefits. Women have a particular interconnectedness with nature and, therefore, the way they would manage waste is different from men’s way. It is therefore crucial to capture the individual and societal dynamics that underlie empowerment. There are now over 20 different definitions of the concept that address different aspects of the phenomenon (Goldman and Little 2015).

Despite socialist welfare efforts, the process of women's empowerment has been limited by the continued unbalanced distribution of care and domestic tasks within families, with gender roles typical of traditional patriarchal societies (Kapllanaj et al. 2016).

As a consequence, the decision to enter the labor market aims to achieve an optimal allocation of time, given that:

- More work time results in higher earnings, but also in lower levels of satisfaction and non-market utility of leisure time
- More leisure time increases its indirect utility, but reduces income.

Thus, spending extra time on work or leisure involves an opportunity cost on the activity left behind.

According to the statements of this theory, wages affect the allocation of an individual's time between work and leisure. According to neoclassical theory, a woman who spends most of her time on household activities will be less likely to enter the labour market if compared to another woman who spends less time on these activities. In Gary Becker's theory, the family is the central decision-making unit. The family is the common agent that decides how to allocate the time of each of its members to one of three activities: household consumption, household production, and paid work.

In order to increase family income and minimize opportunity costs, families allocate their time by applying a kind of specialization rule based on the differentiation of roles among household members. By applying this rule, families maximize both the income and the indirect utility of household productions. Becker's new home economics explains gender differences by the comparative advantages that women could obtain by focusing their time on household production.

This implies a clear division of roles within the family, in which men specialize in paid work and women in housework. The supply of female labor is highly dependent on the husband's labor resources: if these resources are high, then it is more convenient for women to specialize in domestic production.

However, Kabeer (2017) shows that women's access to the labor market is at least one element to empower women. She argues that women's access to employment is not enough to ensure women's empowerment, but that access to employment under the best conditions that make them empowered. As for Séguino (2017), he shows that investing in women's education is beneficial for their labor market participation. Indeed, it allows them to seize economic opportunities and also to show their hidden talents. In addition, as the level of education increases, women have easier access to the labor market.

Empirical literature review

The cooperation of women is essential to the long-term success of any urban services project. In many cultures, women are responsible for the cleanliness of the home and its immediate environment. Thus, waste disposal is one of their daily tasks. In addition, women are the primary users of urban services. This role of women makes them ideal beneficiaries of solid waste management projects. They are generally given a higher priority than men in improving services. But their voices are rarely heard and their participation in community decision-making is minimal.

Women are often the initiators of a solid waste management project or general solid waste management improvement. Saphores, Nixon, and Ogunsetian (2006) cover unique sociodemographic variables such as education, environmental beliefs, and political affiliation to examine key factors that influence willingness to recycle e-waste in California. Nixon and Saphores (2009) conducted a study in the U.S. on how different sources of information, such as print, television, radio, and face-to-face communication, influence the decision to start recycling.

Kurisu and Bortoleto (2011) studied the megacity regions of Tokyo, Osaka, and Aichi regarding the age, gender, and loading of plastic shopping bags to analyze their relationship with waste prevention behaviors. The effect of waste disposal fees to control waste and encourage recycling in Japan is examined by Usui (2003).

According to Kanyenze et al (2011), about 2.5 million tons of industrial and household waste is per year and only 30% of this waste is collected and disposed of in many large cities around the world. Due to rapid urbanization and the way we view waste differently between genders and the available waste collection and disposal facilities are not enough to meet the needs of the city, there is a need for an inclusive approach to waste management.

Studies by Wilson et al. in 2006 on the importance of marginalized groups in waste in India identified their role as crucial in reducing waste. However, the study could not determine the effectiveness of their participation. The study found that waste management by these marginalized groups was motivated by the need to supplement income and reduce poverty. The study concluded that if the marginalized groups were organized and subsidized jobs were created, poverty would be reduced.

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When applied to hotel food waste, hotel managers represent such people that not only do they define what food to cook and how to serve it, but they are also in charge of making decisions on the ground. This includes decisions about food waste management. Saltzman, Duggal, and Williams (1993) study the impact of changes in household income on its recycling effort and Wertz (1976) examines the impact on waste generation. Berger (1997) studies socioeconomic and demographic variables, including income, to examine their relationship with recycling and environmental behavior.

In terms of social factors, Swami et al. (2011) examine age as an independent variable and its impact on waste management in the United Kingdom. Ekere, Mugisha, and Drake (2009) examine a wide range of social factors such as gender, peer influence, lot size, household location, and membership in an environmental organization for a region in Uganda to observe their impact on separate waste collection.

However, in other studies such as Van Liere and Dunlap (1981), gender was not a significant predictor of environmental concerns and attitudes as other sociodemographic variables. Eagle and Demare (1999) comparison of mean pretest attitude scores with gender showed that girls had significantly higher moral attitude scores than boys; there was no significant difference in the ecological attitude scores of boys and girls. Kellert (1985) found no gender differences in these two attitudes for American children in grade 2.

Shimanko (2019) investigated the factors affecting per capita municipal solid waste and recycling rate, applying panel data from 2001 to 2014 for each prefecture in Japan.

The results first show that regions with a higher proportion of women have lower per capita municipal solid waste and higher recycling rates, both at significant levels. The second finding is that a higher proportion of older people also have a much lower amount of municipal solid waste per capita.

On the other hand, the results show that higher gross domestic product and higher school enrollment translate into higher municipal solid waste per capita and lower recycling rates at a significant level. The results indicated that regions with strong financial indicators have significantly higher recycling rates.

Working method

In this section, we will analyze the evolution of the employment rate of women and waste management in Tunisia. Following to Malik et al. (2018), we use an applied survey method to identify the core issues at the household and industry level in the implementation of integrated waste management.

The next step is to measure and analyze the potential and economic benefits of waste management that can be used as a basis for the household income increase strategy. In addition, the next step was to model the employability of women through a partnership policy in the implementation of waste management and integrated waste management action programs at the household and industrial levels.

Djuwendah (2000) indicates the average amount of waste generated per capita per day in a country or city, using the following approach:

$$V_d = V * P$$

V_d = Total volume of waste collected at the landfill (kg / day)
V= Volume of waste produced per person (kg / person / day)
P = Total population.

This approach uses secondary data based on data recorded over a period of time. For projecting the daily volume of waste into the foreseeable future, the following approach should be used:

$$Q_n = P_n * V$$

Q_n = the waste produced in Tunisia per day
P_n = the number of residents in the planned area
V = the average amount of waste produced per person per day

With the projection of the amount of waste, the total population will follow the evolution of the amount of waste.

Djuwendah's (2000) method for predicting the total population of the future can be done by the following formula:

$$P_N = P_O (1 + r)_N$$

With Pn = Total population Year – n ; Po = Total population in the last year of data ; r = Average - Average annual population growth (%) ; n = Schedule of projections

RESULTS AND DISCUSSION

The analysis of waste volume is done by multiplying the number of people with an average waste generation per inhabitant per day in Tunisia. The analysis showed that the rate of waste generated in 2019 was 1.59 kg/inhabitant/year with a comparison of previous studies in 2010 was 1.2 kg/inhabitant/year, which means that an average growth of landfill waste over 9 years is equal to 0.39 2 kg/inhabitant/year.

Results of waste rate per inhabitant and total waste per year

This table below illustrates waste's results:

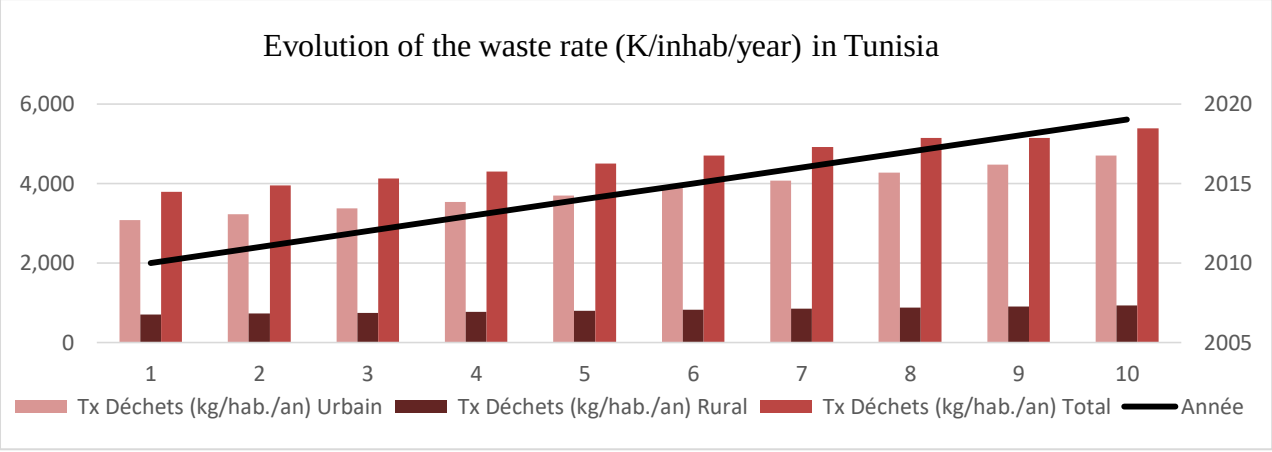
Table-1: Results of waste rate per inhabitant and total waste per year

Total waste (kg/inhab./year)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Urbain	1,2	1,24	1,28	1,32	1,36	1,4	1,45	1,49	1,54	1,59
Rural	0,55	0,56	0,58	0,6	0,62	0,64	0,66	0,68	0,7	0,72
Total waste (t/year)	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Urbain	3 082	3 225	3 374	3 531	3 695	3 876	4 067	4 266	4 476	4 696
Rural	701	724	748	773	798	825	852	879	908	937
Total	3 782	3 949	4 122	4 304	4 493	4 701	4 918	5 146	5 146	5 384

Source: author based on Ministry of Local Affairs and Environment document (2016), Tunisia's Second Biennial Report.

We have observed an increasing evolution of waste in this country both in the urban environment as well as in the rural environment. These stylized facts evolve in the following way. Thus, illustrates this graph below:

Graph- 1 : Evolution of the waste rate (Kg/inhabitant/year) in Tunisia from 2010 to 2019



Source: *Elaboration by the author*

In this previous graph, we notice that it is clearly a question of preventing or reducing the production and harmfulness of waste; then, collecting the waste; organizing the transport of waste; recovering the waste by reuse, recycling or any action aimed at obtaining reusable materials or energy.

Results of the Tunisian population from 2010 to 2019

In most African capitals, less than 30% of waste is disposed of only less than 30% of waste is evacuated. The 70% that is not evacuated is littering the streets. This insufficient collection rate has negative consequences for the health of

the population, especially for people living in urban areas. Most of the population (men and women) live in this environment.

This table below illustrates the facts in Tunisia from 2010 to 2019.

Table-2: Results of the Tunisian population from 2010 to 2019

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total Population	10536	10646	10756	10869	10983	11117	11253	11391	11531	11672
Urbain Population	7 017	7 120	7 224	7 330	7 438	7 566	7 697	7 831	7 966	8 104
Rural Population	3 519	3 526	3 532	3 539	3 545	3 551	3 556	3 561	3 565	3 568

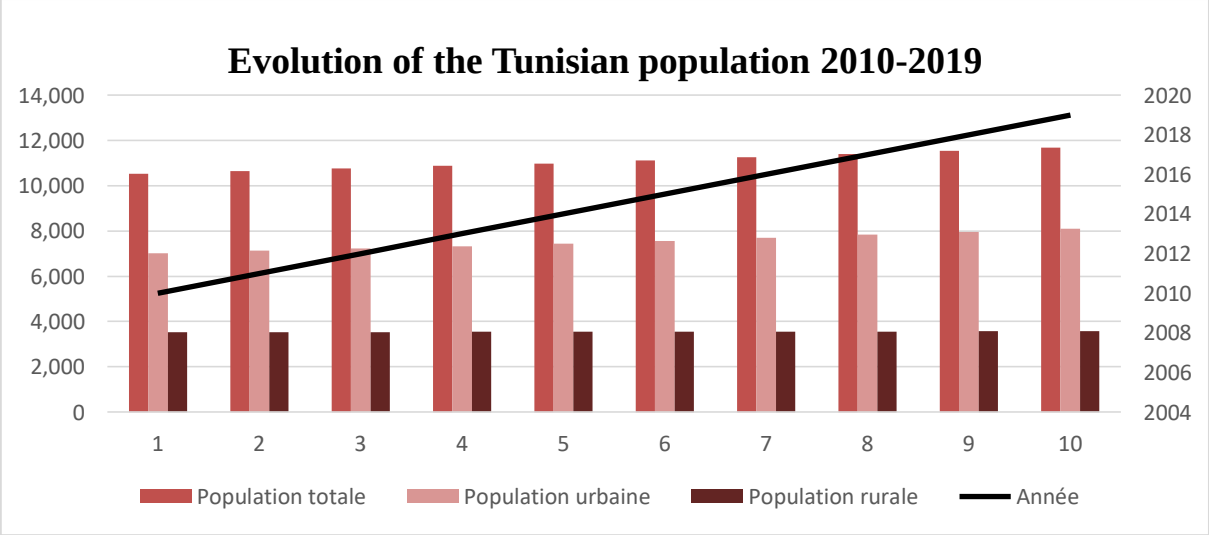
Source: Author based on Ministry of Local Affairs and Environment (2016), Tunisia's Second Biennial Report

The Tunisian population has experienced for four decades a demographic evolution marked by a gradual slowdown in growth. By increasing from 10.536 million inhabitants in 2010 to 11.672 million in 2019. The population of municipalities, which can be considered as the urban population, has also experienced a slowdown during the same periods: from 8.1042 million against 7017 million in 2010. While fertility has declined nationwide, population growth in rural areas during the 2010-2019 period has been significantly lower than for the population as a whole.

Outside the communes, the slowdown in population growth is the result of three combined effects: the decline in fertility, migration (rural exodus, interregional and international migration) and the creation of new communes.

Thus, the following graph illustrates:

Graph-2: Evolution of the Tunisian population 2010-2019



Source: Author

In sum, we note an increase in the population at a low rate in both urban and rural areas.

In this respect, it is important to highlight the progression of gender (male and female) in the labor market in this country with perpetual evolution in the urban environment. Indeed, the overall rate of active Tunisian women has increased over the last three decades. And this despite the difficult reconciliation of the role of wife and mother with professional life.

Evolution of the activity rate of women from 1990 to 2017

This table below illustrates evolution of the activity rate of women:

Table-3: Evolution of the activity rate of women from 1990 to 2017

Year	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017
Women	23,6	24,4	24,5	24,7	24,8	24,9	24,9	25,8	25,6	26	26,6	26,5
Men	67,9	67,3	67,7	68	68,7	69,5	70,1	70,3	70	68,8	68,5	68,3

Source: Author based on Ministry of Local Affairs and Environment (2016), Tunisia's Second Biennial Report

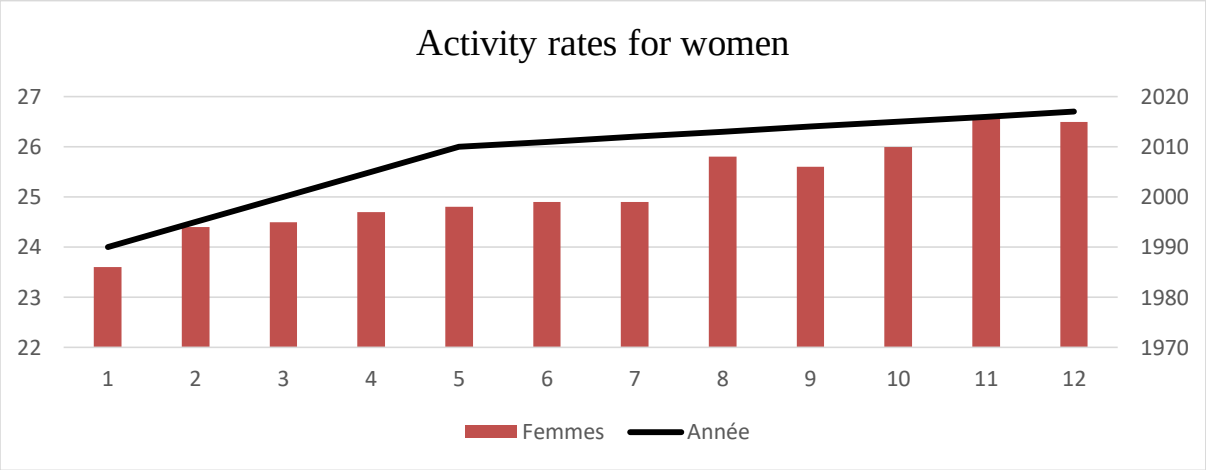
The reasons for this increase are varied, starting with the desire to improve the family's income, the desire to practice what they have learned in their schooling, and even the search for financial independence.

Thus, in order to be able to work full time, many of them decide to reduce the number of their offspring. Some women with degrees who cannot juggle a professional career and child rearing prefer to simply give up outside work and devote themselves to the education of their children.

Evolution of women's activity rates in Tunisia

More detailed, we will highlight the activity rate of women.
As illustrated by these graphs below:

Graph-3: Activity rates for women



Source: Elaborated by the author

Several factors may explain the low presence of women in local government, including difficulties in reconciling family life with professional, political or associative life, and the persistence of social attitudes that value the role of men in the public and professional sphere and in community management, to the detriment of women's role. This table below illustrates population and disposable income in Greater Tunis, 2012

Table-4: Aggregate Data on Population and Disposable Income in Greater Tunis, 2012

Intrant	Unité	Rurale	Urbaine	Total
Population	#	226.917	2.278.084	2.505.000
Revenu disponible par habitant	$EU	33	33	33,4
Revenu potentiel de la collecte	Millions de $EU	7,6	76,0	83,6
Coût de la collecte	$EU/tonne			35,5
Coût de l'enfouissement	$EU/tonne			12,9
Coût total de la chaîne des déchets	$EU/tonne			48,4

Source: Author from INS website: www.ins.nat.tn/; and WDI (2013).

We notice, according to the data available in the city of Tunis, in 2013, the population of this city is estimated at 2.5 million, or 23.2% of the total population. , the affordable cost, which takes the place of the reference collection charge, amounts to 1% of disposable income, or US$33.4 per capita in 2012.

CONCLUSION AND EMPHASIS ON ECONOMIC POLICIES

In this work, we made an empirical study between women's employment rate and waste management. With regard to employment, we found that men still occupy the top position. Despite this imbalance, the integration of women in the labor market has improved. From this point of view, it also contributes to the management of waste, especially household waste. The latter has an impact on health care. Thus, many of the recyclers and waste pickers are women. But women often choose informal waste collection as the only option available to combine childcare and domestic responsibilities with income.

As a result, the results of this research work indicate that the economic value obtained from total waste increases from year to year. However, waste management is done at the lowest possible level. Since the women are homemakers.

In addition, we used a quantitative descriptive approach over a period from 2010 to 2019. Waste pickers are also exposed to greater health risks by picking up waste in landfills and are at greater risk of sexual harassment, violence, and sexual abuse in urban landfills. However, women's activity rates are constantly changing. Thus, to support waste management, the role of women is very important.

The economic implications of this research work were based on the previous findings:

- ✓ Strengthening women's leadership skills and networks within the sector at all levels (local, national, and regional)
- ✓ Identify and work with existing recyclers.
- ✓ Encourage the adoption of non-discriminatory human resource practices in the formal sector
- ✓ Improve the livelihoods and living conditions of women waste pickers in the informal sector.
- ✓ Implementing education, training and knowledge sharing on gender equality.

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